

Location Map

Legend



Exhibit A7

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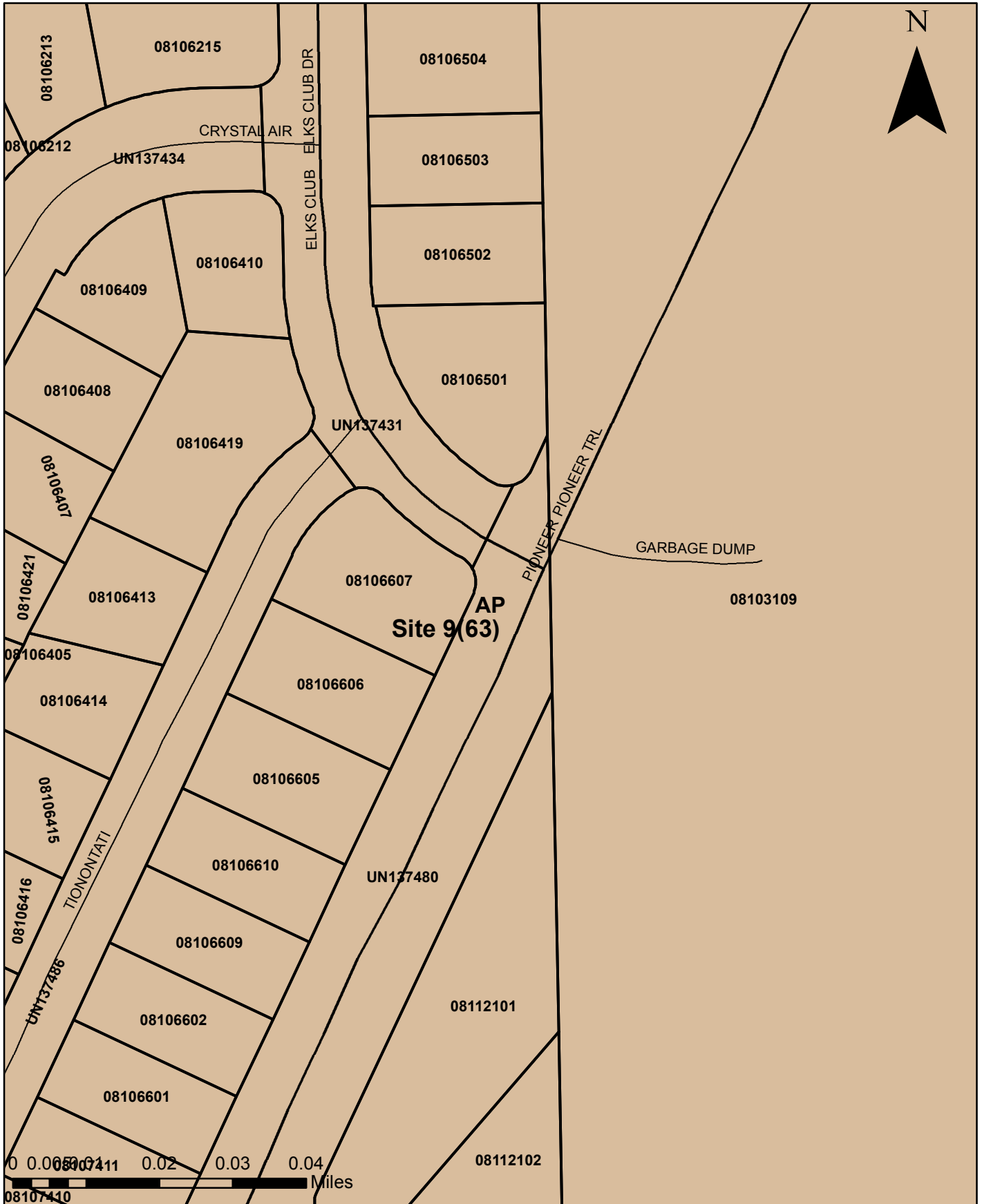


Exhibit B7-Land Use

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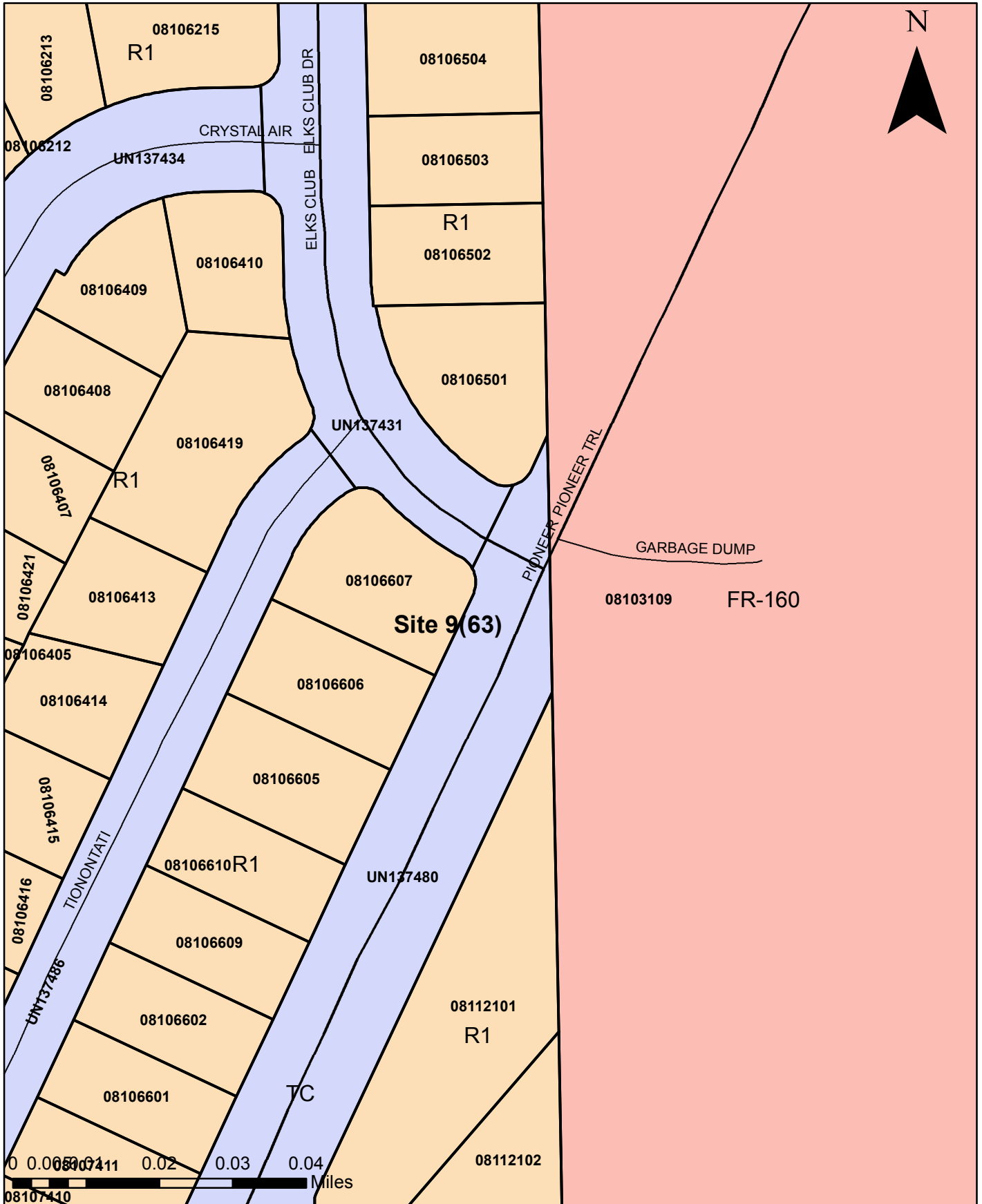


Exhibit C7-Zoning

Client:



Project Architect:



222 W. LOCKEFORD STREET
SUITE 9
LODI, CA 95240

Site Agent:

100% Construction Drawings

Drawing Phase:

**SC SOUTH LAKE
TAHOE 063**
PROW PIONEER TRAIL
(NEAR) 8-14 PIONEER TRAIL
SOUTH LAKE TAHOE, CA 96150
PSL #471236

Site Name:

Professional Seal:

It is a violation of law for any person, unless they are acting under the direction of a licensed Professional Architect/Engineer, to alter this document.

Rev.	Date	Description
01	04/02/18	Constr. Dwgs 90%
02	04/02/18	Constr. Dwgs 100%

Project No.:

Date: 04/02/18 Job No.:

Scale: AS SHOWN CAD File:

Designed By: JG Checked: RB

ELEVATIONS

Sheet Title:

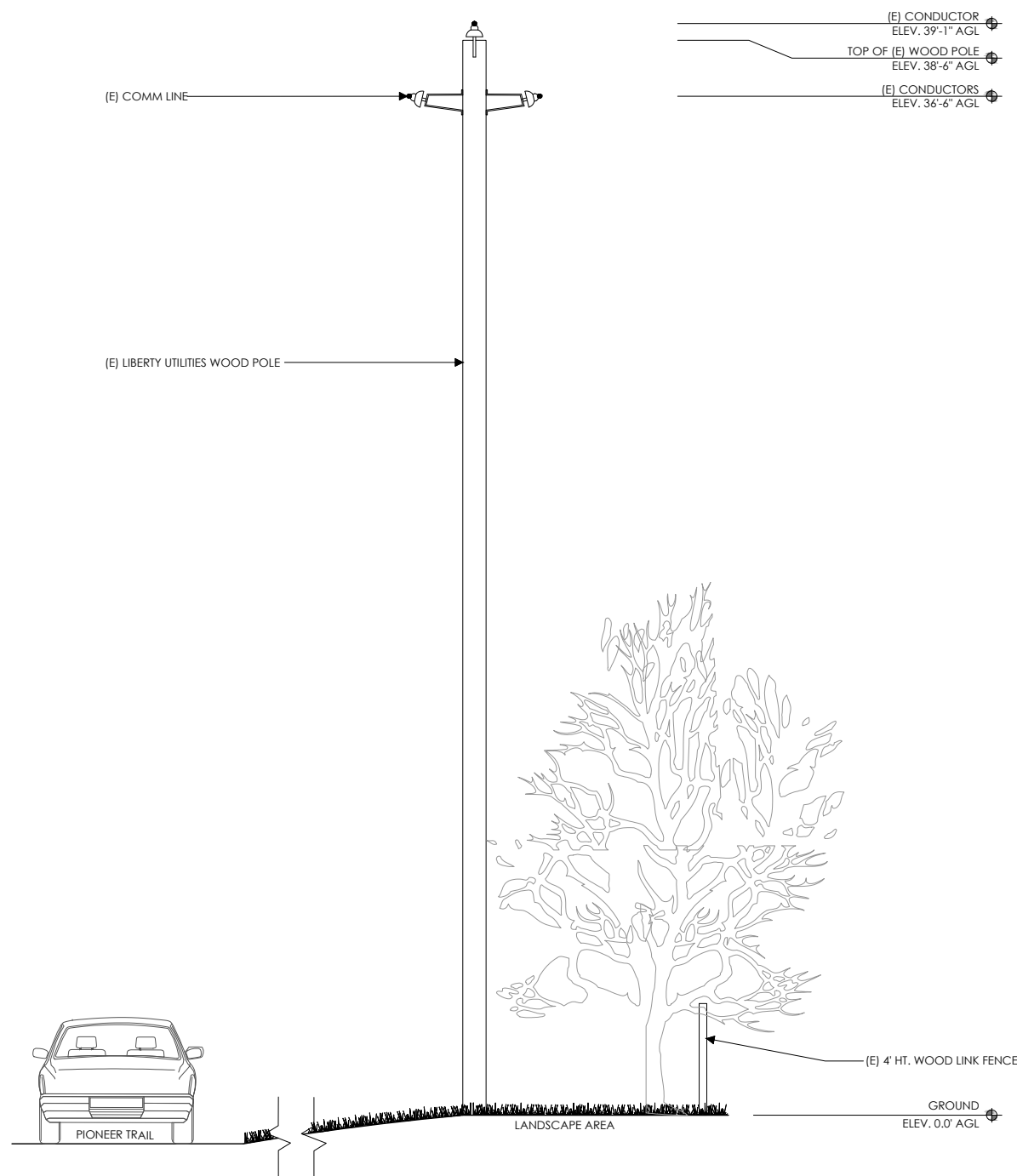
A.3

Sheet No.:

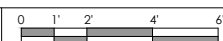
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MAKE READY NOTES

1. ALL LIBERTY SITE SPECIFIC MAKE READY IMPROVEMENTS TO BE COMPLETED PRIOR TO VERIZON INSTALLATION.
2. ALL RISER LOCATIONS SHOWN ON PLANS TO BE VERIFIED BY LIBERTY PRIOR TO INSTALLATION.
3. ANY CONFLICTS WITH PROPER RISER INSTALLATION SHALL BE BROUGHT TO THE ATTENTION OF VZW PRIOR TO CONSTRUCTION.

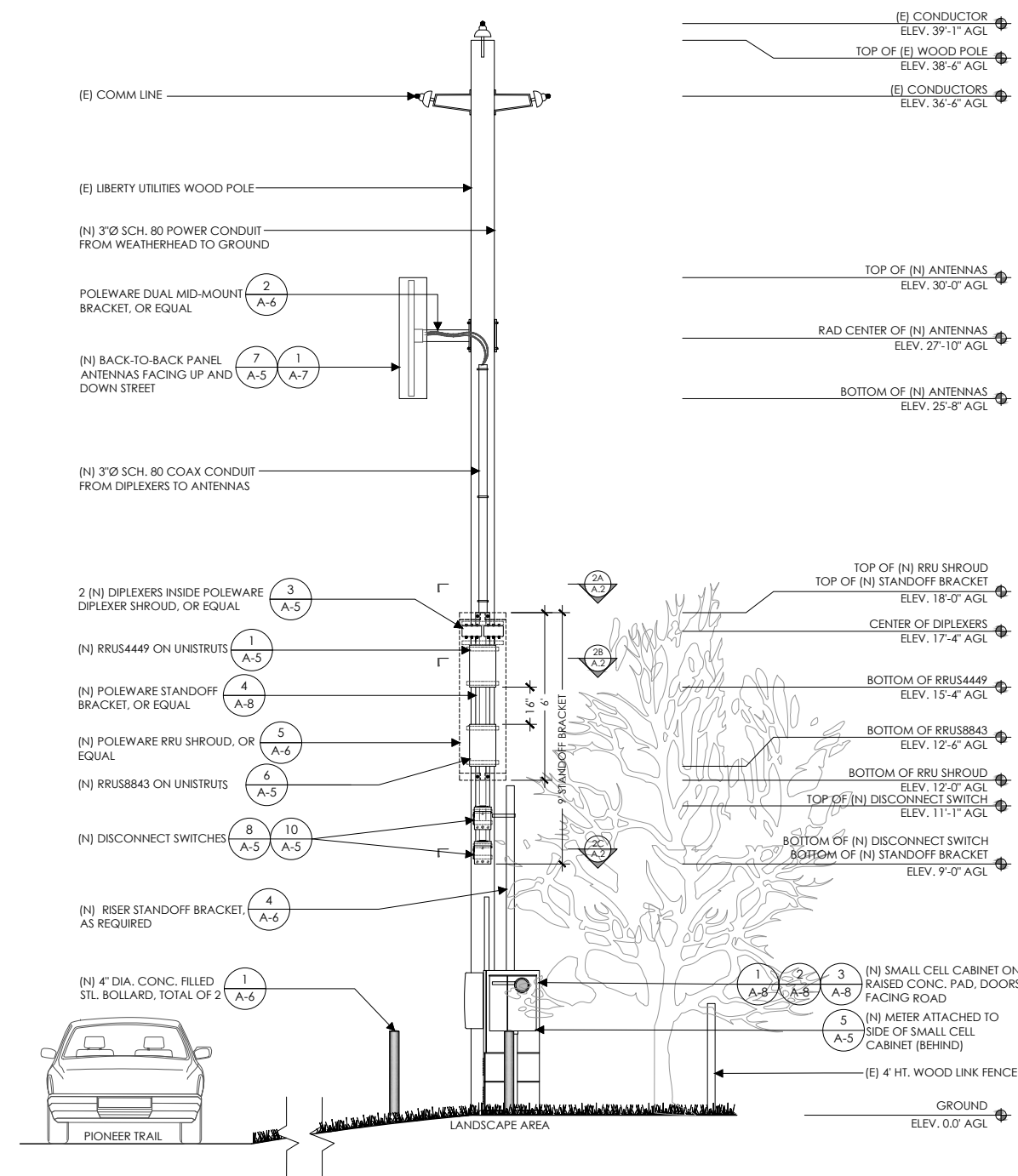


NORtheast ELEVATION - EXISTING

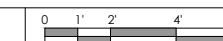


SCALE
3/8" = 1'-0"

1



NORtheast ELEVATION - PROPOSED



SCALE
3/8" = 1'-0"

2

Exhibit D7 - Site 9 (63)

UNIT: ERICSSON RRUS4449 B5 B13 W/
PROTRUDING ITEMS

HEIGHT: 18 INCHES

WIDTH: 13.2 INCHES

LENGTH: 9.4 INCHES

WEIGHT: 70 LBS (EXCLUDES MOUNTING HARDWARE)



UNIT: ERICSSON RRUS8843 W/
PROTRUDING ITEMS

HEIGHT: 18 INCHES

WIDTH: 13.2 INCHES

DEPTH: 11.3 INCHES

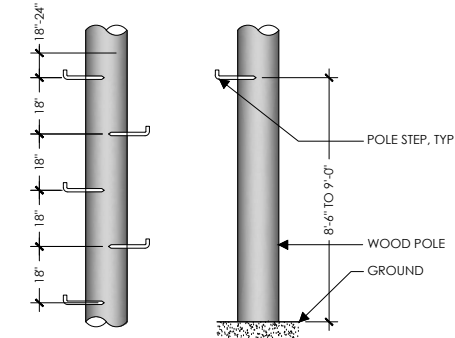
WEIGHT: 75 LBS



STEP: POLE 1/2" X 10 INCH GALVANIZED
WEIGHT PER 100: 99 LBS
MANUFACTURER: AERIAL SERVICE COMPANY, INC.
1-800-256-5186
http://www.linemen-tools.com/
J1118

MODEL #: J1118

DESCRIPTION: POLE STEPS ARE USED ON WOOD POLES WHERE FREQUENT ACCESS TO POLE MOUNTED EQUIPMENT IS REQUIRED. FLAT DRIVING SURFACE AND SHARP POINT EASE INSTALLATION. FETTER DRIVE THREAD PERMITS REMOVAL WITH A WRENCH. HOT-DIPPED GALVANIZED FOR CORROSION RESISTANCE. NOTCHED MARK ON STEP INDICATES PROPER DRIVING DEPTH.

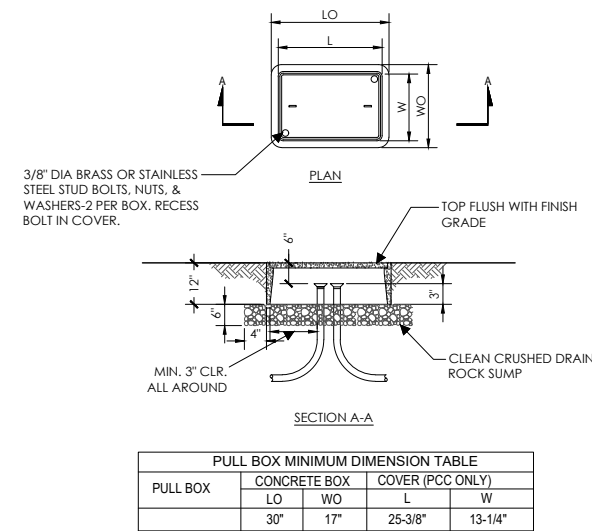


RRUS4449

1 RRUS8843

6 POLE STEPS

9



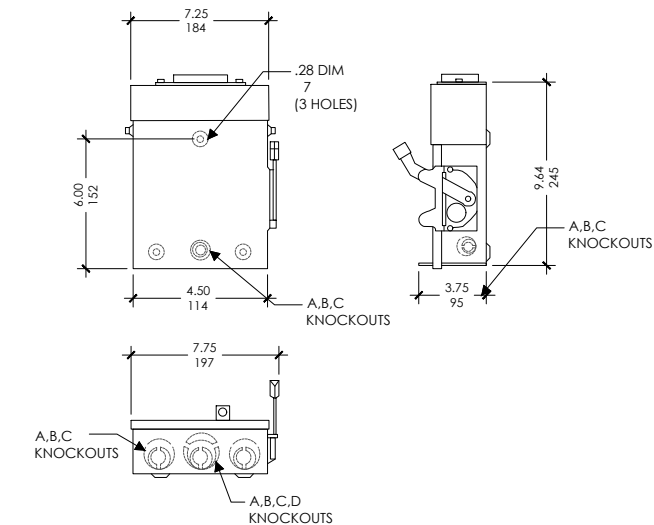
PULL BOX	CONCRETE BOX		COVER (PCC ONLY)	
	LO	WO	L	W
	30"	17"	25-3/8"	13-1/4"

HEIGHT: 52.7 INCHES

WIDTH: 16.1 INCHES

DEPTH: 11.8 INCHES

WEIGHT: 54.7 LBS



FIBER PULL BOX

2 NOT USED

4 ANTENNA

7 DISCONNECT SWITCH

SCALE NOT TO SCALE 10



HEIGHT: 8.31 INCHES

WIDTH: 2.48 INCHES

DEPTH: 7.0 INCHES

WEIGHT: 4.4 LBS

* OR APPROVED EQUAL

UNIT: 100 AMP METER W/ TEST BYPASS

HEIGHT: 24 INCHES

WIDTH: 12 INCHES

DEPTH: 4-5/8 INCHES



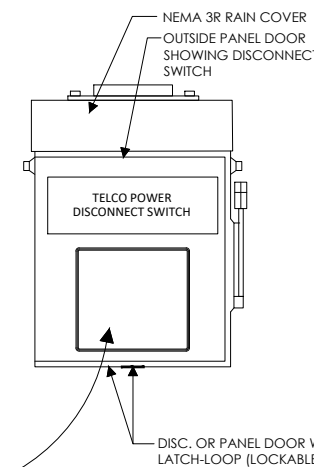
Exhibit E7 - Site 9 (63)

NOTE: NEW PHENOLIC SIGN ATTACHED TO EXTERIOR PANEL

CONTRACTOR NOTE: SITE ID WILL BE SITE ID, MARKET ID, SITE #, AND SITE NAME

- NORMAL SHUT-DOWN PROTOCOLS:**
1. Call 800-264-6620 NOC 24 HRS prior to schedule a shutdown day and time.
 2. Give NOC the Node number _____.
 3. On scheduled day of shutdown, pull the disconnect handle to the "OFF" position.
 4. Call NOC when work is completed.

- EMERGENCY SHUT-DOWN PROTOCOLS:**
1. Call 800-264-6620 NOC immediately.
 2. Give NOC the Node number _____.
 3. Pull the disconnect handle to the "OFF" position.
 4. Call NOC when work is completed.



ON WOOD POLES - SIGN ON ALUMINUM WITH SS SCREW TO THE POLE 3' BELOW ANTENNA

SIGN PLACEMENT: AFFIX TO THE STRUCTURE 3-4' BELOW THE COMMERCIAL RF ANTENNA(S) OR 3' BELOW LOWEST POWER WIRE

SIGN COLOR: YELLOW

CONTRACTOR NOTE: SITE ID WILL BE SITE ID, MARKET ID, SITE #, AND SITE NAME

DIPLEXER

3 METER

5 DISCONNECT SIGNAGE

8 RF WARNING SIGNAGE

11



Verizon Wireless
2785 Mitchell Drive, Suite 9
Walnut Creek, CA 94598

Client:



Project Architect:



222 W. LOCKEFORD STREET
SUITE 9
LODI, CA 95240

Site Agent:

100% Construction Drawings

Drawing Phase:

SC SOUTH LAKE
TAHOE 063
PROW PIONEER TRAIL
(NEAR) 8-14 PIONEER TRAIL
SOUTH LAKE TAHOE, CA 96150
PSL #471236

Site Name:

Professional Seal:

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02	04/02/18	Constr. Dwg 100%

Project No.:

Date: 04/02/18 Job No.:

Scale: AS SHOWN CAD File:

Designed By: JG Checked: RB

EQUIPMENT DETAILS

Sheet Title:

A.5

Sheet No.:

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Existing



view from Pioneer Trail looking west at site

SC South Lake Tahoe 063
(NEAR) 8-14 PIONEER TRAIL, SOUTH LAKE TAHOE, CA
Photosims Produced on 4-5-2018

Proposed



**Verizon Wireless • Proposed Small Cell (No. 471236 “SC South Lake Tahoe 063”)
8–14 Pioneer Trail • South Lake Tahoe, California**

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate its small cell (No. 471236 “SC South Lake Tahoe 063”) proposed to be sited in South Lake Tahoe, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas on a utility pole sited in the public right-of-way near 8–14 Pioneer Trail in South Lake Tahoe. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standard

The U.S. Congress requires that the Federal Communications Commission (“FCC”) evaluate its actions for possible significant impact on the environment. A summary of the FCC’s human exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The FCC limit for exposures of unlimited duration to radio frequency energy for various wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm ²	1.00 mW/cm ²
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

Power line frequencies (60 Hz) are well below the applicable range of this standard, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.

General Facility Requirements

Small cells typically consist of two distinct parts: the electronic transceivers (also called “radios”) that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are typically mounted on the support pole or placed in a cabinet at ground level, and they are connected to

**Verizon Wireless • Proposed Small Cell (No. 471236 “SC South Lake Tahoe 063”)
8–14 Pioneer Trail • South Lake Tahoe, California**

the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, “Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation,” dated August 1997. Figure 2 describes the calculation methodologies, reflecting the facts that a directional antenna’s radiation pattern is not fully formed at locations very close by (the “near-field” effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the “inverse square law”). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including drawings by Meridian Management LLC, dated April 2, 2018, it is proposed to install two CommScope Model SBNHH-1D65A directional panel antennas on a cross-arm to be added to the existing utility pole sited in the public right-of-way on the west side of Pioneer Trail, south of its intersection with Elks Club Drive in South Lake Tahoe. The antennas would employ no downtilt, would be mounted at an effective height of about 28 feet above ground, and would be oriented toward 30°T and 200°T. The maximum effective radiated power in any direction would be 5,640 watts, representing simultaneous operation at 2,010 watts for AWS, 1,970 watts for PCS, 790 watts for cellular, and 870 watts for 700 MHz service. There are reported no other wireless base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.050 mW/cm², which is 7.3% of the applicable public exposure limit. The maximum calculated level at the top-floor elevation of any nearby building is 5.2% of the public exposure limit. It should be noted that these results include several “worst-case” assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

**Verizon Wireless • Proposed Small Cell (No. 471236 “SC South Lake Tahoe 063”)
8–14 Pioneer Trail • South Lake Tahoe, California**

Recommended Mitigation Measures

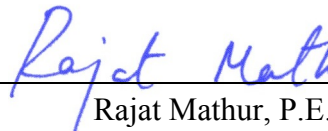
Due to their mounting location and height, the antennas would not be accessible to unauthorized persons, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training, to include review of personal monitor use, be provided to all authorized personnel who have access to the antennas. No access within 18 feet at the same height as the antennas, such as might occur during certain maintenance activities on the pole, should be allowed while the small cell is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that an explanatory sign* be posted at the antennas and/or on the pole below the antennas, readily visible from any angle of approach to persons who might need to work within that distance.

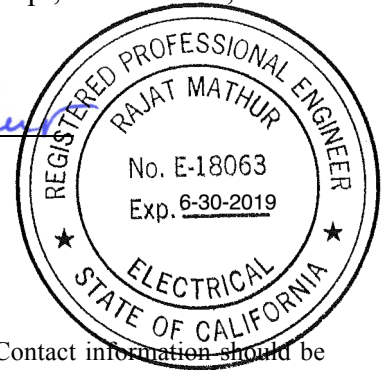
Conclusion

Based on the information and analysis above, it is the undersigned’s professional opinion that operation of the small cell proposed by Verizon Wireless near 8–14 Pioneer Trail in South Lake Tahoe, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating small cells. Training authorized personnel and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-18063, which expires on June 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.


Rajat Mathur, P.E.
707/996-5200



April 5, 2018

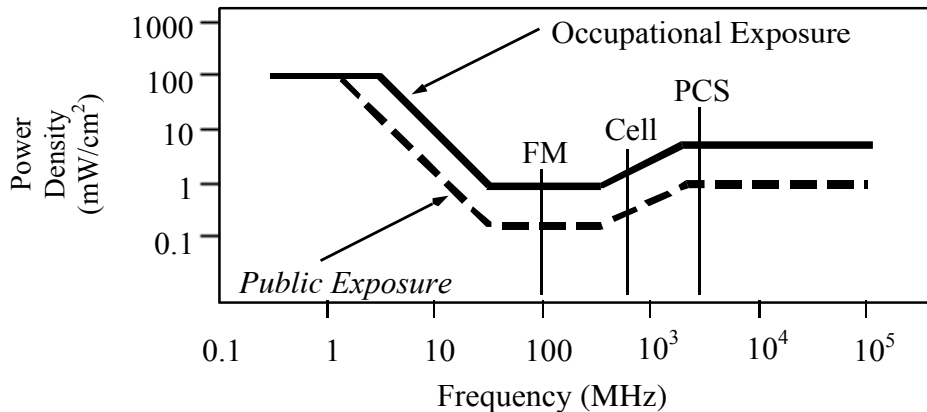
* Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (e.g., a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of California Public Utilities Commission General Order No. 95.

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements (“NCRP”). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm ²)	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f²</i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f ²	<i>180/f²</i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	3.54√f	<i>1.59√f</i>	√f/106	<i>√f/238</i>	f/300	<i>f/1500</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.



RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm²,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm²,

- where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
 P_{net} = net power input to the antenna, in watts,
 D = distance from antenna, in meters,
 h = aperture height of the antenna, in meters, and
 η = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

power density $S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}$, in mW/cm²,

- where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

